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Do people with schizophrenia display theory of mind deficits in clinical interactions?

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ABSTRACT

Background. Having a 'theory of mind' (ToM) means that one appreciates one's own and others' mental states, and that this appreciation guides interactions with others. It has been proposed that ToM is impaired in schizophrenia and experimental studies show that patients with schizophrenia have problems with ToM, particularly during acute episodes. The model predicts that communicative problems will result from ToM deficits.

Method. We analysed 35 encounters (>80 h of recordings) between mental health professionals and people with chronic schizophrenia (out-patient consultations and cognitive behaviour therapy sessions) using conversation analysis in order to identify how the participants used or failed to use ToM relevant skills in social interaction.

Results. Schizophrenics with ongoing positive and negative symptoms appropriately reported first and second order mental states of others and designed their contributions to conversations on the basis of what they thought their communicative partners knew and intended. Patients recognized that others do not share their delusions and attempted to reconcile others' beliefs with their own but problems arose when they try to warrant their delusional claims. They did not make the justification for their claim understandable for their interlocutor. Nevertheless, they did not fail to recognize that the justification for their claim is unconvincing. However, the ensuing disagreement did not lead them to modify their beliefs.

Conclusions. Individuals with schizophrenia demonstrated intact ToM skills in conversational interactions. Psychotic beliefs persisted despite the realization they are not shared but not because patients cannot reflect on them and compare them with what others believe.

INTRODUCTION

Theory of mind

For some time now 'theory of mind' (ToM) has been an influential model of social cognition in psychology. Having a well developed 'theory of mind' means that one appreciates one's own, and others' mental states. ToM draws on the idea of 'folk psychology', in which two mental states are central – 'belief' and 'desire'. It assumes that these are not directly observable but inferred from behaviour, and used to explain and predict it. Such inferences are not idiosyncratic but systematic and are based on a common sense 'theory' (cf. Wellman, 1990). The property of beliefs and desires that ToM stresses is that they are distinct from what they represent (cf. Leslie, 1987). Moreover, ToM research foregrounds the ability to represent representations, without which it would be impossible to appreciate that other people's beliefs about the world may differ from one's own. This is taken to be the corner stone of adult theory of mind.

Frith (1992), Frith & Corcoran (1996) and Corcoran (2000, 2001) have proposed that ToM

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is impaired in schizophrenia. What could be involved in impaired ToM? According to the theory of ToM, understanding the intentional nature of behaviours requires an individual both to know the concepts of folk psychology (e.g. what 'beliefs' are and how they differ from 'knowledge') as well as the rules governing their use (cf. Mitchel & Riggs, 2000). Moreover, since mental states of an individual at any point may not be uniquely determined, their attributions may need to be warranted. A ToM deficit may then consist in either not knowing psychological concepts, not being able to use them properly, or in not being able to justify their use (cf. Wimmer & Gschaider, 2000).

ToM and schizophrenia

Initial research suggested that mainly those with negative symptoms have problems with 'mentalizing', while those with positive symptoms tended to 'over-mentalize' (sometimes incorrectly). LaRusso (1978) for instance found that paranoid patients were better than controls at detecting genuine reactions to shock, but this was because of their perceptual and interpretive biases. More recently, Frith (1987, 1992, 1995) has proposed a model in which schizophrenia is a disorder of meta-representation. According to him, its symptoms arise because of an inability to generate willed actions and to recognize and monitor one's own and other people's mental states. Frith (1992) suggested that two specific deficits explain the positive symptoms of schizophrenia. First, problems with monitoring one's own intention result in passivity symptoms such as delusions of control, thought insertion, thought withdrawal, and auditory hallucinations (Corcoran, 2000, 2001). Secondly, the inability to infer correctly the mental states of others gives rise to delusions, such as paranoid delusions and delusions of reference (Frith, 1992; Frith & Corcoran, 1996).

Experimental evidence pertinent to the model where it concerns representing intentionality of others is ambivalent. Consistent with predictions, initial studies reported that people with paranoid symptoms performed more poorly on both first and second order theory of mind tasks (involving other person's beliefs about the world and beliefs about beliefs respectively) than those with passivity symptoms (Corcoran *et al.* 1995). In addition, Frith & Corcoran (1996) found that both patients with positive and negative symptoms performed more poorly on first and second order theory of mind tasks than patients with passivity symptoms.

Doody *et al.* (1998) and Drury *et al.* (1998), however, found only second order ToM deficits, and these were associated with positive and negative symptoms as well as with general symptom clusters. Moreover, in the tightly controlled study by Drury *et al.* (1998), patients with delusions of persecution and reference did not perform worse than non-deluded patients on first or second order ToM tasks. Drury *et al.* concluded that it remained to be seen whether the second order theory of mind deficits are primary deficits or a result of information processing overload, particularly during acute episodes of illness.

Hence, it seems that differential association between ToM deficits and specific symptoms of schizophrenia has not been securely established (cf. Pickup & Frith, 2001), despite the recent rush of studies reporting deficits in understanding indirect speech acts, irony and other verbal humour (e.g. Winner *et al.* 1998; Langdon *et al.* 2002; Tenyi *et al.* 2002). Moreover, these experimental studies do not determine exactly what mentalizing deficits people with schizophrenia may have and it is here where a detailed analysis of their everyday interactions is fruitful.

Intentionality and interaction

Virtually all theories of communication recognize that the premise of communicators' intentionality is indispensable to communication. What people do with words is purposeful and expresses their knowledge of each other and of their environment. Social interaction involves discovering and changing intentions and beliefs of others, and socially coordinating one's own with theirs (Clark, 1996). Grice (1957) made recognition of intention a necessary condition of meaning, and in Searle's (1969) account of speech acts, representing beliefs, wants and intentions of 'hearers' are necessary conditions of speech acts. We inform each other of things because our respective beliefs are different and we know this; we tell each other to do things because our intentions do not coincide and we know this; we judge each other because we value different things differently and we know this. The

point of social interaction may be to change these differences, and so individuals who have problems representing their own and others' intentionality should have great problems communicating. Individuals with schizophrenia have indeed various problems in communication (e.g. Rochester, 1979; Thomas & Leudar, 1995; Thomas *et al.* 1996), and the ToM model predicts that they should have very specific interactional difficulties, stemming from their theory of mind deficits (Frith, 1992; Doody *et al.* 1998; Corcoran, 2001; Langdon *et al.* 2002). According to Frith (1992) this difficulty stems from the fact that:

> The schizophrenic knows well that other people have minds, but has lost the ability to infer the contents of these minds: their beliefs and intentions. They may even lose the ability to reflect on the contents of their own mind. However, they will still have available ritual and behavioural routines for interacting with people, which do not require inferences about mental states (p. 121).

This remains to be empirically demonstrated in the context of naturally occurring social interactions.

METHOD

Aim

The aim of this study was to investigate whether patients with a diagnosis of schizophrenia display in real clinical interactions the deficits that the theory of mind account of schizophrenia predicts. The method of analysis used was conversation analysis (CA), enabling us to demonstrate in detail where exactly in conversational 'mentalizing' individuals with schizophrenia fail, or, conversely, how they manage their own and other peoples' intentionality adequately. Furthermore, analysing communicative problems using CA shows with precision whether or not they involve ToM failures.

Data

Two sets of clinical interactions were analysed: routine psychiatrist–patient consultations and cognitive behaviour therapy sessions (CBT), both in out-patient settings. The corpus consisted of 32 audio-visually recorded psychiatrist–patient consultations and three complete audio-recorded courses of CBT (the number of sessions ranged between seven and 52). Altogether, the database comprised recordings of >80 h.

Participants

All of the participants met DSM-IV criteria for a diagnosis of schizophrenia confirmed by the treating psychiatrist or the director of the psychology service. Fifty-seven per cent of the sample was male, the age range was 28–66 and they had a mean length of illness of 13·9 years (S.D. 9·8). Fifty-four per cent were White British and 46% were Asian, African or African-Caribbean. Informal carers were present in approximately one-third of the psychiatrist–patient consultations. There were seven psychiatrists, who were all male and six were consultants. The CBT was conducted by three different clinical psychologists. In this paper, for the sake of brevity, we use materials from the first three sessions of each of the CBT cases and seven of the psychiatric consultations.

RESULTS

Talk was transcribed using Jefferson's orthography (Sacks *et al.* 1974) retaining the characteristics of speech delivery such as pauses, overlap, stress, intonation and pace (see Appendix). (The transcripts in this paper are however presented in a simplified format.)

Conversation analysis was used to analyse the transcripts. This method has been used to study children's acquisition of ToM, talk in aphasia and autism, as well as in medical assessment and therapeutic interactions (Heath, 1986, 1992; Peräkylä, 1997; Antaki, 1999, 2001; Wilkinson, 1999; McCabe *et al.* 2002). The transcripts were examined to identify evidence of ToM skills and deficits in the consultations. The analysis is presented below in two parts: (1) conversational sequences that display intact ToM; and, (2) conversational sequences where patients appear to have difficulty justifying belief attributions.

(1) Conversational sequences that display intact ToM

Two kinds of evidence from social interaction were identified that would clearly indicate ToM skills: (*a*) patients, spontaneously or in response to a query, represent their own and others'

mental states (i.e. beliefs, intentions and feelings); and (*b*) patients demonstrate anticipatory interactive planning (cf. Drew, 1995), which relies on a projection of the interlocutor's turn. This can only work if the speaker has an adequate representation of what the interlocutor intends to do.

(*1a*) *Appreciating others' states of mind*

The first three extracts come from one patient, to illustrate a case in some detail. Extract 1 is from a mental state examination interview, which took place prior to cognitive behaviour therapy. The patient (S.T.) reports the abuse he suffers from people on account of his mental illness (lines 1–3). This abuse is an intentional behaviour and the interviewer, indeed, takes the report to entail a tacit attribution of knowledge by the patient to the abusers (this being that the patient is mentally ill) (lines 7–8).

(1) CBT ST&IE : 1 : 407 (P, patient; Int, interviewer)†

1. P people shout out windows ah you fuckin' nutter
2. Int do they
3. P yeh (..)
4. Int what do you make of that (…)
5. Int how do you k-
6. P just get on with it, what's the point? (.)
7. Int how do all these people know that you've had er (.) sort of mental health problem or (.)
8. whatever

(3 lines omitted)

9. Int well I know (remember one) van that drives past me that's (builders) (.4) and they
10. (thin' there at- building) to me house.

The interviewer presupposes that the patient is able to represent knowledge others have of him – otherwise he could not have asked the question properly. Moreover, it is not always enough to attribute mental states, one may have to justify the attributions (e.g. Williams, 2001). In fact, the assessment of the attributions in a mental state interview as reasonable beliefs rather than delusions will depend on providing a believable account. And P indeed provides one – the knowledge of his psychiatric problems was probably spread by the builders who had access to his home when they were working there (lines 9–10). Note that in providing this account P is reflexive about his own knowledge – he believes that they know for specific reasons. So, this patient is able to represent the knowledge others have of him, and he can justify these attributions. The interviewer presumes that this is so and draws on this ability of his patient. Not everything goes smoothly in this interaction – note the ungrammatical speech, false starts and occasional incoherence. Past research (Thomas *et al.* 1990) indicates that these are typical of speech of individuals with schizophrenia – they are however not those predicted by ToM.

Extract (2) comes from the same assessment interview and S.T. again demonstrates the ToM facility, showing that what happened in (1) was not a one-off event.

(2) CBT ST&IE : 1 : 670

1. Int would you go out in a pub where you didn't know people, is what I'm asking
2. P mm yeh I'd be more likely to (sa) in a pub that it didn't know (me)
3. Int right

He again represents knowledge others have of him (and the lack of it), and this determines what he does (line 2). His actual problem is the same as before, avoiding those who know about his mental health problems. His assessment of what others know is based on a simple implicit heuristic – 'people outside my neighbourhood are unlikely to know me'. It is not arbitrary but grounded in the patient's everyday experience.

An important aspect of the ToM account is that the individual ought to be able to de-couple representations from what is represented (Leslie, 1987). For example, the individual with a fully developed ToM should realize that different people may have different beliefs about the same object. S.T. clearly has this facility – he compares different people's beliefs about himself.

(3) CBT ST&IE : 1 : 732

1. Int right but your mum and dad you trust (.) completely
2. P yeh
3. Int okay
4. P they know it's not my fault, (.) me sister (.) er my sister thinks
5. Int uhm
6. P (I'm putting it on) on

† The first part of annotation identifies the type of interaction (Co, consultation; CBT, cognitive behaviour therapy); the digits specify the session number and the number of the first line in the original.

P trusts his parents, but not his sister. His justification of this compares their respective assessments of his problem. The parents 'know' that his problems are not his fault, his sister 'thinks' 'he is putting it on'. P is then sensitive to social distribution of knowledge, and his position in it – he knows what his parents know, and rejects what his sister believes. The comparison of his family members' beliefs about his problems is socially consequential – it underpins the trust in them or otherwise. The account demonstrates that he can distinguish between knowing and thinking, as well as between the mental states of different people with regard to the same matter.

The following extract is from a patient who is not in remission at the time of the interview. His problems include intrusive voices and are such as to require therapy. Yet detailed conversation analysis demonstrates clearly that he represents his own and other people's beliefs, compares them, grounds them in his experience and warrants them, and appreciates practical consequences of intentional states. The interactions of all 35 participants included sequences where the person represented coherently mental states of others and used them effectively, as S.T. did. In the rest of this section we provide additional examples, the specific details of which are important. Extract 4 comes from a routine psychiatric consultation. The clinician (not the same one as in 1–3) again has no problem using the patient as a source of information about his girlfriend's thoughts (line 1) and the patient (no. 35) has no problem responding appropriately, doing this by providing premises from which the thoughts can be inferred (line 2–3).

(4) Co35 : 54

1. Dr and what does she think about the medication
2. P she sort of ah (.) I don't know (.) she (.) she I donno she sees the negative side of it a lot
3. of the time
4. Dr whats the negative side or it
5. P I donno (.) she always thinks I have a bad memory you know (.) it makes me sorta
6. slow down an stuff

In a mental state examination prior to CBT (extract 5), another patient (B.H.) likewise demonstrates that he is capable of appreciating his friend's feelings. He reports that the friend is depressed (line 9) and argues that this is because of what he reads.

(5) CBT BH&IE : 1 : 1183

1. P and er he gets loads of books every week

(4 lines omitted)

6. (feeling a bit) (0.3) (the dead things) like the (.) the
7. old (.) victorian (0.3) age (0.6) of the slums and that
8. Int mhm
9. P I think that was making him a bit depressed but he would- he wouldn't (.) (admit to) it

Note that P reveals that his friend does not think his depression is to do with reading (line 9). This means that he presents the psychiatrist with a socially distributed belief, i.e. P and his friend both believe that the friend is depressed, but they differ in what they believe the reasons for the depression are (cf. Clark, 1996). This patient's speech is again linguistically badly formulated, but not deficient in the way ToM predicts.

The representation of intentionality may concern not only absent individuals, but others present in the interaction. In extract 6, another patient (no. 3) asks the psychiatrist what he thinks about the cause of her symptoms (lines 1–5). The psychiatrist responds by asking the patient 'what do you think I think?' (line 8). In asking this particular question, he treats the patient as capable of considering his beliefs about her beliefs. The patient recognizes that the doctor disagrees with her own assessment 'it's not the people you think?', demonstrating that she knows that the psychiatrist holds different beliefs from her own about the origin of her symptoms.

(6) Co3 : 93

1. P So do do you think what I'm telling you even when I was working in (place) I asked my
2. supervisor (0.8) because she was dealing with the psychiatry people an (1.0) do they do they
3. exist that there are people that are causing this (0.2) eh sickness (0.6) because I'm fully
4. confident fully satisfied now it's not the medication that makes me with all the symptoms
5. (0.4) it's the (.) those people that I'm (0.3) that (.) are (after me) that I
6. Dr yeah mhmm

7. P feel sick an everything (.) I blame them (.)
8. Dr yeah (1.2) well what do you think I think? ((*smiling*)) (0.2)
9. P mhm? (0.8)
10. Dr well I I think you have an illness that's fairly well under control at the moment (0.1) but eh
11. an that's what's troubling you (0.2) but (0.8)
12. P it's not the people you think? Ha-ha-ha-ha (1.2)
13. Dr that's not my opinion

In Extract 7 another patient (no. 12) reports that he is getting funny thoughts coming into his head (lines 1–2). When asked by the psychiatrist how he copes with these thoughts, he replies that he tells hardly anybody else about them because he is ashamed of what is happening in his head (lines 6–7). He is aware that other (or many other) people do not have such thoughts – his thoughts are 'funny', different from others people's thoughts. Moreover, the patient realizes that other people would assess his 'funny thoughts' negatively. Shame is a moral and hence social concept as one can only be ashamed of something in relation to social, i.e. other peoples' judgements. This may be based either on his previous experience or on his expectations about what other people are likely to think. In either case, he is representing other peoples' actual or projected beliefs about his thoughts – in ToM terms, a second order belief. He provides this belief as the rationale for feeling ashamed and the grounds for not telling other people about himself, which the psychiatrist does not find problematical.

(7) Co12 : 63

1. P but then again emm (3.0) eh I I'm startin to get well I'm not starting I (keep) I still get those
2. funny thoughts you know (.) coming into my head an stuff an (0.4)
3. Dr mm hmm (.)
4. P they cause me a bit of ehm (0.6) trouble
5. Dr how do you how do you cope with funny thought thoughts? (1.6)
6. P well I I can't (rea) well I don't tell anybody well (.) hardly anybody exactly what what's
7. happenin in my head (.) but em (0.3) cos I'm ashamed of it really (0.3) y'know

The extracts so far demonstrate that these individuals with schizophrenia can spontaneously and successfully express their own beliefs along with present and absent others' states of mind, and they can warrant these attributions. The ways in which they do this is appropriate to the specific conversational setting and in no way indicative of 'ritual and behavioural routines'.

(*1b*) *Conversational devices requiring appreciation of sequential expectancy*

There are many instances in the foregoing examples where patients obviously understand their interlocutors' intentions. Additional, more complex, evidence of ToM can be identified – conversational moves which display planning and the development of a conversational sequence, which can only succeed if one appreciates the other participant's mental state and likely response to a particular utterance. Here we provide examples of such interactions.

The best evidence are conversational moves which display not only an understanding of what the interlocutor has just said but moves which display planning of the sort which it would be implausible to suppose could be matters of rote learning. A useful account is provided by Drew (1995) for what he, following Goody (1995), calls 'anticipatory interactional planning'. At least some conversational sequences visibly require (and display) knowledge of others' states of mind: those are the sequences in which participants set up a certain, normative, bi-lateral development of the interaction. In other words, sequences which start when the action of A makes sense only as a precursor to a future action, the delivery of which is contingent on an expectation of B's contribution. A good example of such a sequence, following Drew, is the use of a preliminary utterance that 'sets the scene' for a subsequent action. For example, I might ask 'do you know Jane?'. This might be a simple question. But if you say 'yes', and I say 'well she's got a new job', then the original question was a preliminary to the news report, and that was its conversational point. For A to launch a preliminary like that (a pre-request, a pre-informing and so on), A must be projecting B's acknowledgement, which implies their competence to acknowledge. In the case of the example already given, A must know that B is acquainted enough with Jane to be ready to hear about her new job, but not so close to her as already to have heard the news. This can of course go wrong: B might say 'who?'. That the

interaction goes right is evidence that A has a working appreciation of what B knows. That is the logic of the examples we shall see below. In each case, the patient's contribution is heard as part of a projected sequence. The patient and her or his interlocutor project a certain unfolding of the interaction. The projection includes an expectation of a specific state of mind, prompting a specific class of response, which reveals the conversational force of the earlier utterance.

In extract 8, another patient (no. 27) uses a question format as the first move in a sequence, which is later revealed as setting the scene for an account about what happened with another doctor.

(8) Co27 : 2

1.	P	so I thought it might get better
2.	Dr	yeah (.) it often does
3.	P	you know (.) and it didn't (.) and I went to see Dr (Name) I don't know if you got a
4.		letter from him
5.	Dr	no
6.	P	I went to see him (.) he then explained the problems of feeling terrible (.) it it affected
7.		my chest as well as my heart kept speeding up

In lines 3–4, the patient asks 'I don't know if you got a letter from him?'. This is in question format, but it also has the conversational effect of introducing the business that the patient transacted with 'Dr Smith'. Thus, when the interlocutor says 'no' in line 5, he confirms that he did not receive the letter, and licenses the patient to explain what his business with Dr Smith was. The patient has successfully initiated a sequence of moves that allows him successfully to recruit his interlocutor into hearing a 'news report' about what had happened with a third party. To do so, the patient had to be able to project not only his own future move (making the report) and to launch it by 'setting the scene' in that oblique manner, but also had to gauge his interlocutor's likely response so that the project would come off.

In the next example it is the interviewer who initiates a trajectory, and it is the patient who has to 'decode' the first move and come up with an appropriate response. Just before the start of this extract, the psychologist asks the patient (ST) how he coped with visions. The patient replies that he would drink 'enough' cans of beer to make them disappear.

(9) CBT ST&IE : 1 : 234

1.	Int	and how many would have to be enough :
2.		(1.2)
3.	P	three cans of special brew?
4.	Int	right that's quite a lot isn't it really cos it's strong
5.	P	yeh
6.	Int	strong stuff
7.		(1.0)
8.	P	I tried it with other beers but special brew or the stronger ones seemed to get rid of it quicker
10.	Int	were you drinking before you got the visions

At line 3 the patient could reasonably think that he has given a full answer to the question 'three cans of special brew'. He might expect the psychologist to acknowledge the answer and move on. But the psychologist calls attention to the strength of the drink. It is at this point that we see the patient display a fully competent appreciation of a planned interactional sequence. The psychologist remarks, at line 4, that special brew is 'strong'. The patient has to understand the psychologist's 'observation' as a call to account for drinking that much strong beer. At first (line 5) he merely says 'yeh'. The psychologist then says 'strong stuff' (line 6), which is hearable as a reiteration of the implied request for an account.

It is also noticeable that a full one-second elapses between 'strong stuff' and the next turn, a period in which the psychologist could have proceeded to next question, but did not. It is at this point that the patient says 'I tried it with other beers but special brew or the stronger ones seemed to get rid of it quicker'. This makes sense as an account which meets the psychologist's repeated – but implicit – queries. The patient is having to 'go beyond' the literal meaning of his interlocutor's remarks and to understand what kind of response the interlocutor expects. In other words, the patient has successfully 'decoded' his interlocutor's unstated intentions. He has understood that the psychologist was using the format of a simple 'observation' or a 'noticing' in a way planned to elicit an account for a questionable answer. This patient is not an exception. Every participant with schizophrenia

demonstrated that he or she could engage in the 'anticipatory interactional planning', which depends on projecting their communicative partners' intentions and beliefs. This provides further evidence that persons with schizophrenia are able to cope with social interaction in a way which is specific to the exact requirements of the interaction.

(2) Conversational sequences where patients have difficulties justifying belief attributions

The participants with schizophrenia seem to be able to represent mental states of others and use them appropriately in clinical encounters. Some problems of language and communication are present (cf. Thomas *et al*. 1990) but not those indicating ToM deficits. Problems did arise in the context of marked disagreement between the patient and psychiatrist about certain beliefs held by the patient, specifically when the patient tried to justify holding beliefs that others did not share. We have selected what appear to be the most problematical conversational sequences in the data in order to analyse in detail the characteristics of patients' talk about their psychotic symptoms vis à vis ToM.

In extract 10, some of which we have already analysed, the patient (no. 3) asks the psychiatrist what he thinks about the cause of her sickness (lines 2–6).

(10) Co3 : 92

1.	Dr	so it's not really I wouldn't really consider it an increase in (dose)
2.	P	SO DO Do you think what I'm telling you even when I was working in [place] I asked my
3.		supervisor (0.8) because she was dealing with the psychiatry people and (1.0) do they exist
4.		that there are people that are causing this (0.2) eh sickness (0.6) because I'm fully confident
5.		fully satisfied now it's not the medication that makes me with all the symptoms (0.4) it's (.)
6.		those people that I'm (0.3) that (.) are (after me) that I I
7.	Dr	yeah mhmm
8.	P	feel sick an everything (.) I blame them (.)
9.	Dr	yeahe (1.2) well what do you think I think? ((*smiling*)) (0.2)
10.	P	mhm? (0.8)
11.	Dr	well I I think you have an illness that's fairly well under control at the moment (0.1) but an
12.		that's what's troubling you (0.2) but (0.8)
13.	P	it's not the people you think? ha-ha-ha-ha (1.2)
14.	Dr	that's not my opinion
15.	P	you don't have to tell me. Even they never told me but the only thing they said is
16.		it exists only for those people who can hear it.
17.	Dr	Yeah
18.	P	That's how they told me

She starts her turn with 'Do you think', explicitly marking that her interlocutor may have a view on the matter different from her own (lines 2–8). This way of asking the question means that the answer will validate or contradict her account. After some prompting from the patient (lines 10–13) the psychiatrist tells her that he thinks she has an illness, which is what is troubling her. In line 13, the patient reiterates the question and this might at first appear as an inability to take on board what the psychiatrist has said (which contradicts her irrational belief), but the question is designed in response to the psychiatrist's reluctance to engage with talk about the content of these psychotic symptoms and his focus in the consultation on the form of her symptoms and pharmaceutical remedies (McCabe *et al*. 2002). Although the psychiatrist does not agree with her assessment, at this point he does not explicitly disagree either. The patient shows that she has understood the pragmatics of the exchange by acknowledging her disagreement and her laughter marks this as a sensitive issue (cf. Haakana, 2001). Then the psychiatrist disagrees explicitly (line 14) and the patient marks his disagreement as not unexpected (lines 15–16). In providing a warrant for her beliefs the patient demonstrates a ToM capacity, but she warrants her 'delusion' by claiming privileged access to information. This warrant is badly calculated and unlikely to be persuasive.

The patient is clearly symptomatic (earlier in the consultation she talked about people drilling holes in her brain), yet she recognizes that there is a discrepancy between her belief and the psychiatrist's and that this discrepancy is problematical (Leudar *et al*. 1997; Leudar & Thomas, 2000). Moreover, even though she does not revise her opinion, she is aware of the difficulties

this creates and the consequences – she needs to return to the psychiatrist. The specific problem in her reasoning is in warranting her delusion.

The second example, (11), comes from a closing phase of a psychiatric consultation where the patient (no. 1) reasons about a symptom of his illness.

(11) Co1 : 92 (M, patient's mother; Dr, psychiatrist; P, patient)

1. M ohkay (0.8) three months time *{smiling}*
2. Dr so *{writing in notes}*
3. P why don't people believe me doctor when I say I'm God (0.2) why don't they believe
4. M hhhh ****** *{smiling}*
5. P me (.) cos everyone knows I am (0.4) I think everyone knows (.)
6. Dr .hhhhh
7. M hhh .hhhh
8. P (I mean) its not nonsense it's true

As in (10), the patient contrasts his own belief that he is God – implied by his assertion in line 3 – with the disbelief of other people. His representation is correct – people do not believe him – and he demonstrates his sensitivity to other peoples' beliefs and the facility to distinguish them from his own. P not only states the belief difference but asks the doctor for the reasons, so demonstrating that he understands that people's beliefs differ for reasons. Of course one wonders why P is puzzled by the disbelief, and indeed he himself tries to justify his puzzlement (line 5). In doing this, his reasoning becomes less acceptable. The justification is incoherent – people do not believe him when he says that he is God, yet he asserts that everyone knows this to be the case. Paradoxically, however, he demonstrates another ToM skill, i.e. justify mental attributions in face of disbelief. He is sensitive to microlevel non-verbal cues provided by the other participants' reactions. He recognizes his mother's and the psychiatrist's audible exhalations in lines 4, 6 and 7 (along with his mother's smiling) as unsympathetic to his claim to Godhood and then weakens the claim from 'Everyone knows' to 'I think everyone knows' within the same utterance. (His belief, however, that he is God seems to remain firm.) Nevertheless, despite the incoherence, he is trying to reconcile the conflict between his belief and others' reactions to him when he says he is God. He even considers their objection to his assertion, i.e. that it is nonsense, and counters this with 'It's true' to justify his belief. In other words, there is indeed a problem in P's reasoning but it does not involve ToM failure – his difficulty arises when he tries to warrant his 'delusion'. But then justifying the bizarre is not an easy matter.

A final example comes from a consultation in which a psychiatrist asks another patient (no. 23) to explain why he attends the psychiatric clinic, this for the benefit of a medical student who is also present. The patient speaks about his beliefs in some detail and in particular his delusional belief that he was called upon by God to deal with Satan and that he is immortal. His account of this immortality is, however, inconsistent. When the psychiatrist asks him if there is eternal life now he replies 'not yet' (extract 12, line 2). Yet, when the psychiatrist asks if he himself has eternal life, the patient responds in the affirmative (line 6).

(12) Co23 : 115

1. Dr so is there (.) is there eternal life now?
2. P ehm not yet (.) until God says says (.) until God can make the decision to go forward
3. with it
4. Dr right
5. Dr have you got eternal life?
6. P yes

This inconsistency is a discursive failure (it violates Grice's maxim of manner) but the failure does not involve ToM. The patient may be expressing inconsistent beliefs, yet he attends to the psychiatrist's concerns about these beliefs and how they may influence his actions. In particular, he is keen to prevent the psychiatrist from concluding that he is a danger to himself, the possibility of which is implicit in the psychiatrist's repeated questions. (Extract 13, lines 1–2, 4, 6.)

(13) Co23 : 124

1. Dr so if you got hit by a car or a bus or something like that what would (.) what would
2. happen to you
3. P I'd probably die but I'd come back again
4. Dr right (.) does that mean you (.) you are vigilant when you cross roads or
5. P of course I am I don't want (.) I don't want to test the thesis
6. Dr you don't want to test it out
7. P no

The psychiatrist subsequently expresses his concern explicitly (extract 14, lines 1–3) and the patient's attention to his thoughts is clear in that he voices correctly what the psychiatrist did not get to say (lines 3–4).

(14) Co23 : 97

1.	Dr	right (.) right (.) right its always concerning when people have (.) thoughts
2.		about about sort of
3.	P	What thinking they're immortal? right obviously (.) obviously that's
4.		just a thought I don't go around thinking I'm immortal
5.	Dr	no
6.	P	I'm just thinking about a theoretical issue
7.	Dr	okay alright

The patient here successfully displays second order theory of mind skills and he deals appropriately with the pragmatics of the exchange. The psychiatrist begins to formulate his concern cautiously and delicately, i.e. as a general one about 'people' having thoughts, rather than directing it specifically to the patient. He hesitates in selecting the next words and the patient continues with this general formulation about people 'thinking they're immortal'. In this collaborative completion, the patient offers a candidate understanding of what the psychiatrist is concerned about, which is not rejected by the psychiatrist. He responds to this concern – it is just a thought, he does not go around thinking he is immortal – and he successfully allays the psychiatrist's concern, as indicated by his acceptance 'okay, alright'.

One ToM related problem, which seems to be recurrent, is then observed in sequences where the psychiatrist and patient disagree about a patient's delusional beliefs. The problem specifically involves warranting such beliefs. This is however, not a ToM problem proper – even in these exchanges patients attempted to contrast and reconcile their own beliefs with disbeliefs of others. The delusional beliefs persist despite disagreement but not because the patient is unable to recognize that others have different mental states to their own. There is a problem, but not with being able to represent mental states of others.

DISCUSSION

Thirty-five clinical interactions involving patients with schizophrenia were analysed to identify whether patients were impaired in their ability to appreciate other people's beliefs and intentions and to use them appropriately in talk. Most of the participants had a long duration of illness, their social functioning was compromised by the illness (most were unemployed) and all presented with ongoing positive or negative or a combination of symptoms. The analysis demonstrates that these individuals spontaneously and successfully express beliefs about others' states of mind, as well as about their own. When appropriate, they warrant these attributions using transparent, experience-based heuristics. They are able to represent moves in conversation in terms of their authors' communicative intentions and can bring off their part in complex conversational sequences that hinge on an anticipation of their interlocutor's beliefs. Appreciating others' states of mind often involved them in reflecting on their own beliefs, in contrasting beliefs of different people, positioning themselves in socially distributed cognitions and tying their beliefs causally to actions. The clinicians recognize that their patients can do this and treat the patients as intentional and able to reflect on complex representations of mental states.

There were of course many examples of bizarre beliefs – the patients claimed that they were God, that they were combating the devil, that rats and spiders were visible in their house, and so on. Problematical conversational sequences in fact concerned such delusional beliefs. This talk was marked by disagreement between the patient and others about these beliefs and the problem arose typically in warranting these beliefs. This problem, however, did not stem from theory of mind deficit proper – patients obviously knew that their own beliefs were different from those of others and they conversed accordingly, usually attempting to reconcile others' disbelief. The patients recognized, first, that others did not share their beliefs, and secondly, that others did not find the justification for their claims convincing. This is consistent with the finding of Walston *et al.* (2000) that people with persecutory delusions (i.e. paranoid symptoms) only made mistaken

inferences in relation to the specific persecutory material and person(s) and had otherwise intact reasoning in relation to other people and subject matters. The disagreement of others, however, did not prompt patients to modify their knowledge claims.

In agreement with past research, we observed that the speech of our participants was characterized by errors at a linguistic and textual level. The current study, however, illustrates the competence of individuals with schizophrenia at representing their own and others' mental states and how they use this competence to communicate successfully. This is inconsistent with the results of experimental investigations, many of which apparently 'demonstrate' ToM deficits and thus imply communicative problems. Ours is the first study to analyse ToM competence in real life, yet it did not find the problems. What may be the reason for the discrepancy? Online mentalizing in actual interaction may be more or less demanding than offline mentalizing in an experimental context. For example, it could be that in everyday interactions mentalizing is triggered and 'scafolded' by behaviours of others, unlike in controlled experiments. However, this is purely speculative and the discrepancy highlighted by this study is an empirical problem to be addressed by further research. Nevertheless, this is the first study to analyse ToM in real interactions and so overcomes the limitations of using false belief tasks as a test of theory of mind (cf. Bloom & German, 2000), especially the general information processing demands that are problematic for people with schizophrenia.

The study focused only on relatively stable patients attending out-patient services. Hence, future studies are necessary to determine how theory of mind skills are used *in situ* when patients are acutely ill. Given the heterogeneity of symptom presentation among people with a diagnosis of schizophrenia and the inconsistent results of experimental studies attempting to differentiate ToM deficits among symptom subtypes (cf. Mazza *et al*. 2001), a focus first on how patients use or fail to manage mental attributions in naturalistic interaction and then linking it with symptom profiles may be more useful.

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APPENDIX

Transcription notation

(.)	Just noticeable pause
(.3), (2.6)	Examples of timed pauses
word [word [word	Square brackets aligned across adjacent lines denote the start of overlapping talk
.hh, hh	In-breath (note the preceding full-stop) and out-breath respectively
wo(h)rd	(h) is a try at showing that the word has 'laughter' bubbling within it
wor-	A dash shows a sharp cut-off
wo:rd	Colons show that the speaker has stretched the preceding sound
(words)	A guess at what might have been said if unclear
( )	Unclear talk. Some transcribers like to represent each syllable of unclear talk with a dash
word = =word	The equals sign shows that there is no discernible pause between two speakers' turns or, if put between two sounds within a single speaker's turn, shows that they run together
word, WORD	Underlined sounds are louder, capitals louder still
°word°	Material between 'degree signs' is quiet
>word word< <word word>	Inwards arrows show faster speech, outward slower
→	Analyst's signal of a significant line
((*crying*))	Transcriber's go at representing something hard, or impossible, to write phonetically

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